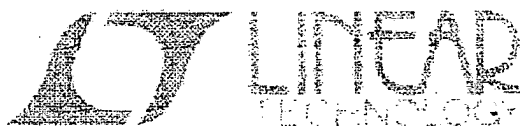


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EXHIBIT A



## LTC1629

## PolyPhase, High Efficiency, Synchronous Step-Down Switching Regulator

### FEATURES

- Dual Controller Operates from One to Twelve Phases
- **Reduces Required Input Capacitance and Power Supply Induced Noise**
- Current Mode Control Ensures Current Sharing
- Phase-Lockable Fixed Frequency: 150kHz to 300kHz
- 1.8MHz Effective Switching Frequency
- **True Remote Sensing Differential Amplifier**
- OPTI-LOOP™ Compensation Reduces  $C_{OUT}$
- **±1% Output Voltage Accuracy**
- Power Good Output Voltage Monitor (LTC1629-PG)
- Wide  $V_{IN}$  Range: 4V to 36V Operation
- Very Low Dropout Operation: 99% Duty Cycle
- Adjustable Soft-Start Current Ramping
- Internal Current Foldback Plus Shutdown Timer
- Overvoltage Soft-Latch Eliminates Nuisance Trips
- Micropower Shutdown
- Available in 28-Lead SSOP Package

### APPLICATIONS

- Desktop Computers
- Internet Servers
- Large Memory Arrays
- DC Power Distribution Systems

### DESCRIPTION

The LTC®1629/LTC1629-PG are multiple phase, dual, synchronous step-down current mode switching regulator controllers that drive N-channel external power MOSFET stages in a phase-lockable fixed frequency architecture. The PolyPhase™ controller drives its two output stages out of phase at frequencies up to 300kHz to minimize the RMS ripple currents in both input and output capacitors. The output clock signal allows expansion for up to 12 evenly phased controllers for systems requiring 15A to 200A of output current. The multiple phase technique effectively multiplies the fundamental frequency by the number of channels used, improving transient response while operating each channel at an optimum frequency for efficiency. Thermal design is also simplified.

An internal differential amplifier provides true remote sensing of the regulated supply's positive and negative output terminals as required for high current applications.

A RUN/SS pin provides both soft-start and optional timed, short-circuit shutdown. Current foldback limits MOSFET dissipation during short-circuit conditions when the overcurrent latchoff is disabled. OPTI-LOOP compensation allows the transient response to be optimized over a wide range of output capacitance and ESR values. The LTC1629-PG includes a power good output pin that replaces the AMPMD control pin of the LTC1629.

Please Click Here for [Reliability Data](#).

## TYPICAL APPLICATION

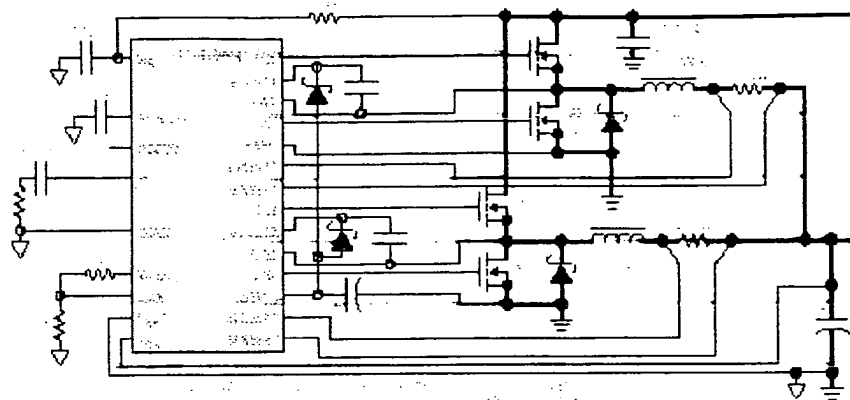


Figure 1. High Current Dual Phase Step-Down Converter

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